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food ethics

Meat

Facing the dilemmas

PLUS

Tim Finney eats breakfast in a slaughterhouse

The challenge: *Tony McMichael, John Wibberley, Ruth Layton* and *Tara Garnett*

Animals versus the environment: is animal welfare a luxury we can't afford?

How should we farm animals in 2050? *Richie Alford, Henry Buller, Joyce D'Silva, Temple Grandin, Matt Howe, Ken Laughlin, Richard Lowe, Jason Matheny, Nicholas Saphir, Steven Tait* and *Colin Tudge*

Contents

Food Ethics, the magazine of the Food Ethics Council, seeks to challenge accepted opinion and spark fruitful debate about key issues and developments in food and farming. Distributed quarterly to subscribers, each issue features independent news, comment and analysis.

The Food Ethics Council challenges government, business and the public to tackle ethical issues in food and farming, providing research, analysis and tools to help. The views of contributors to this magazine are not necessarily those of the Food Ethics Council or its members.

Editorial team:
Tom MacMillan
Elizabeth Adams
Rebecca O'Reilly
Samuel Harris
Geoff Tansey

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Food Ethics Council
39 – 41 Surrey Street
Brighton BN1 3PB UK

T: 0845 345 8574
or +44 (0) 1273 766 654
F: +44 (0) 1273 766 653

info@foodethicscouncil.org
www.foodethicscouncil.org

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Eric Isselée

From the editor

For Jean Anthelme Brillat-Savarin, the great granddaddy of gastronomes, meat was central to a decent meal. Of three menus he designed, even the most frugal has four different meat courses. He quipped:

"It is difficult to conceive of a people subsisting merely on bread and vegetables. If such a nation existed it would certainly be subjected by carnivorous enemies... If not it would be converted by the cooks of its neighbours..."[1]

Hardly more different, then, from Sylvester Graham, the pioneering vegetarian who was ordained as a Presbyterian minister the year Brillat-Savarin died. Graham campaigned for moral restraint, preaching vegetarianism alongside temperance, chastity and baths.

Today our meat habit faces some testing dilemmas and they would be easier to solve if we, in rich countries, ate less of it. Yet, when it comes to finding solutions, we may be better off looking to the Frenchman than to the preacher.

What are the problems? Some are down to how our meat is produced. The most eye-catching is climate change: the livestock sector, which as well as meat produces dairy, eggs, leather, wool and more, accounts for some eight percent of UK greenhouse gas emissions. Globally it is around a fifth, which says more about how much else we spend money on in the UK than it does about the efficiency of our production methods.

The environmental toll extends well beyond climate change to water scarcity and biodiversity loss from clearing forests to make way for pasture or feed production. The Food and Agriculture Organisation (FAO) is worried because it expects global meat demand by 2050 to be more than twice the 229 million tonnes we put away in 2000.[2]

Poor animal welfare is also a problem. Most of the near-to-a-billion animals we slaughter globally each week – which would stretch just short of the moon if they stood in a line – lead lives we would not want to witness. Just under half are intensively produced pigs and poultry, and that is where FAO projects most growth.

Meat consumption is an influence on these production problems but also comes with problems of its own. The 218 grams a day of meat we eat on average in the UK – 342 in the US – isn't good for us, as several reports have spelt out this autumn.[3] In particular, eating lots of red, intensively farmed and processed meats is linked to higher risks of heart disease and some cancers. As well as poor diet, of course, there's food-borne illness to worry about, with livestock contributing much to the UK's estimated £1.5 billion annual food poisoning bill.

So, eat less meat. It won't solve all our problems – it certainly won't be enough to stop climate change – but it seems an all-round sensible thing to do. Yet it isn't that simple. Meat-eating is harshly unequal: to our 218 grams, people in Sub-Saharan Africa average only 36, well below the consumption many nutritionists favour; for the half of a percent livestock contribute to the UK's economy, the livelihoods of 1.3 billion rural people around the world depend intimately on their animals. With this in mind Tony McMichael (p.5) argues for 'contraction and convergence' towards a world-wide average of 90 grams a day – it is countries like the UK and US that need to do the contraction.

As Tara Garnett (p.8) explains, for the climate it also matters which meat you're eating, how it was produced and what else you might eat instead. Whether animals eat waste food, oil seed-based feeds, cereal-based feeds or grass – and even the type of grassland – can tip the balance towards one production system or another, or even towards producing meat instead of doing something different.

Much is made of the trade-offs that eating meat presents. For example, some measures to reduce greenhouse gas emissions come at a cost to animal welfare. We've explored some of these dilemmas in previous reports on *Farming animals for food* and *Drug use in farm animals*. In this edition Kate Rawles (p.13), a member of the Food Ethics Council, unravels the argument that animal welfare is a luxury we can no longer afford.

In other words, the challenge is not only to eat less but also to eat better meat – produced in more humane and environmentally sound production systems yielding, as Henry Buller (p.9) has found, a better quality product. So, more Brillat-Savarin than Graham. Yet that also makes meat cost more, raising food access issues that Raj Patel (p.19) explores.

But perhaps the real challenge is less where to head than how to get there. Here are three suggestions. First, mixed farming: as Ruth Layton (p.7) and Roland Bonney (p.16) explain, mixed systems can combine high animal welfare with good environmental performance. However, mixed farming may be a casualty of the race for incremental improvements in feed conversion efficiency.

Second, international governance: without well-financed multilateral agreements covering livestock and feed trade, enabling countries to exploit their comparative advantage to export at the expense of their environment slips easily into forcing them to do so.

Finally, urban abattoirs: policy needs to get beyond hoping health concerns might dent our appetite for meat. We will eat meat more sustainably when we understand it better, not when we are more frightened of it. There are all sorts of reasons to bring abattoirs back into town, as Tim Finney (p.23) suggests, and what better time to start than this Year of Food and Farming. That way more meat might pass the transparency test (p.16): that we'd still eat it if we knew where it came from.

Tom MacMillan
tom@foodethicscouncil.org

[1] Brillat-Savarin, JA. (1825) *Physiologie du goût*. Available at ebooks.adelaide.edu.au.
[2] Steinfeld, H. et al. (2006) *Livestock's long shadow*. FAO.
[3] WCRF (2007) *Food, nutrition, physical activity and the prevention of cancer.* www.dietandcancerreport.org. McMichael AJ. et al. (2007) Food, livestock production, energy, climate change, and health. *The Lancet*, September 13.

news

Welsh Assembly first on food ethics

The Welsh Quality of Food Strategy, out for consultation until 31st December, has ethics at its heart.

This puts Wales at the forefront of government efforts in the UK to grapple with the overlapping issues around food – not just health, the economy and environmental issues, but also well-being, social justice, freedom of choice, animal welfare and more.

Why? Because setting out clear ethical principles can provide an overarching framework for better decision-making in food policy. Amid complex issues and competing interests, ethical principles help us keep sight of the big picture: What is the right thing to do, all considered? Why? Who is it good for, is it fair and who decides?

Taking an ethical approach encourages rigour when using concepts like sustainable development. It identifies clear shared reference points for negotiating disagreements and it provides a strong rationale for open and accountable decision-making.

The three principles at the centre of the new Welsh strategy are similar to those in the Ethical Matrix, a tool developed by FEC founding member Ben Mepham and used in many of our reports:

1. Well-being

- Food should be safe and nutritious, contributing to public health and reducing the burden of diet-related ill-health;
- Food production and consumption should contribute to social and community cohesion and to the health and well-being of the environment and farm animals.

2. Justice

- Food should be accessible and affordable to all;
- Food should be traded fairly, respecting the needs and rights of all people involved in the process of getting food from farm to fork.

3. Accountability

- The whole food chain should be transparent to public scrutiny and answerable to all people who depend on it;
- Food should be accurately and honestly labelled, in line with national and international food safety regulations, enabling citizens to make choices.

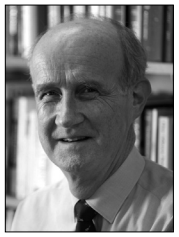
How these principles relate to food quality should be explained more clearly in the strategy, but we see this as a very welcome and important step. We hope others will follow and improve upon the approach that Wales is taking.

Do you think this is a good way to frame the strategy? You can read the full strategy and let the Welsh Assembly Government know what you think by visiting their consultation page (new.wales.gov.uk/topics/health/ocmo/consultations/quality-food/?lang=en).

If you want to respond to any of the articles in this issue or raise a different point, please write us a letter. Our contact details are on the contents page.

Consumers

Contraction and convergence is good for our health



Tony McMichael

The world is eating more and more meat, and meat production is contributing increasingly to global greenhouse gas emissions. Both excess meat consumption and a change in the global climate pose risks to human health.

In 2006 the Food and Agricultural Organization (FAO) issued an important report, *Livestock's long shadow*, drawing attention to the impact of the livestock production sector on the world's climate. The major contributor is enteric methane from ruminant (digastric) grazers – cattle, sheep and goats.

Modern humans come from a long line of meat-eaters, starting from around two million years ago. The widely-accepted 'expensive tissue hypothesis' argues that the introduction of meat into the ancestral human diet lessened the need for a large and heavy-duty intestine for digestion and fermentation of plant foods. The gut is a metabolically expensive organ to run. Hence, this dietary shift released precious energy that could, via the 'experiments' of natural selection, be reapplied to another very energy-intensive organ, the brain. The early human gut thus contracted and the brain expanded.

That brain subsequently powered the evolution of human culture, including the capacity to reshape and exploit diverse environments around the world. Eventually farming emerged, livestock were domesticated, food supplies expanded and human populations grew. Those trends continued over ensuing centuries, and have accelerated dramatically in recent times. Globally, both total population size and total extrasomatic energy use, mostly from fossil fuels, have increased about fourfold since 1900.

As wealth has accrued and food production has become increasingly mechanised, so unit costs have declined and consumer preferences have 'risen'. Today's uptrend is for a one-third increase in total meat consumption in the world by mid-century. FAO argues that this is not a sustainable trajectory. Either our meat production methods must change radically or consumption levels must decline. Or both.

So, the wheel has come full circle. The ancient dietary shift that boosted our cerebral capacity has led to a crowded and wealthier modern world in which there are too many of us wanting to eat too much meat, mostly from ruminants. Hence the now-substantial contribution of the livestock sector to global total greenhouse gas emissions. Estimates by both the UK Stern Report and the FAO indicate that this sector contributes around one-fifth of total global emissions. Methane from the ruminant gut is a problem because, molecule for molecule, it causes much more warming than the better-known greenhouse gas, carbon dioxide.

Nutrition scientists recommend an individual intake of around 50-100 grams of meat per day, to enhance the diet and to provide sufficient iron and vitamin B12. The high-income world is, on average, now way above that level, being within the range of 200-300 grams per day. The US has the highest per-person daily intake. In contrast, the average intake in Sub-Saharan Africa is around one eighth of that American level.

As a world community, we must now consider the various facets of this environmental and public health dilemma:

- Meat consumption is now rising rapidly in many parts of the world.
- There are great differences, at the moment, in per-person levels of meat consumption – some of this reflects cultural preference, some reflects access and affordability. The latter represents a moral challenge in inequity.
- The livestock sector is contributing a substantial (though under-recognised) proportion of global greenhouse gas emissions.
- There is moderately persuasive epidemiological evidence that the risk of large bowel cancer increases at higher levels of red meat consumption. The risks of breast cancer and of obesity and heart disease may also be increased, especially in relation to the high fat content of meat from intensively produced livestock. The World Cancer Research Fund's comprehensive report on *Food, nutrition, physical activity and the prevention of cancer* examines this evidence thoroughly.[1]

In a recent paper in *The Lancet* we propose that the world should commit to reducing the global average daily intake of meat, especially red meat from ruminants.[2] This would be part of the evolving portfolio strategy – across various sectors of commerce, energy use and human behaviour – to mitigate climate change. The fairest approach is 'contraction and convergence', where the world's nations agree to reduce average per-person meat consumption (currently just over 100 grams per day) and to do so equitably. High-consuming populations would reduce their intake and low-consuming populations could increase their intake up to the agreed average level.

To avoid an increasing contribution to global warming from the livestock sector, we recommend a global average target figure of 90 grams of meat per day – with not more than 50 grams from ruminant animals. Indeed, many populations have potential access to other, often healthier, sources of meat; in Australia it would be good for the environment and for the nation's health to eat more kangaroo meat, which is lean and contains omega-3 fatty acids.

This would be a win-win strategy. Global warming would be slowed. Health risks would be reduced in high-consuming populations, and there would be gains in nutritional status in lower-income countries where deficiencies of iron, protein and energy in the diet would be reduced, conferring particular benefits on child health and development. Any increases in cancer, heart disease or obesity-related diabetes in those lower-income countries would be limited by the ceiling intake figure of 90 grams/day.

Phased in over several decades, this would be good for the planet, for global equity and for population health.

Professor Tony McMichael is an epidemiologist at the Australian National University, Canberra. His particular interest is studying environmental influences on population health, especially today's larger-scale influences from climate change, food systems and the urban environment.

[1] WCRF/AICR (2007) *Food, nutrition, physical activity, and the prevention of cancer*. www.dietandcancerreport.org

[2] McMichael AJ, Powles JW, Butler CD, Uauy R. (2007) Food, livestock production, energy, climate change, and health. *The Lancet*, September 13.

John Wibberley

Producers

Rural livelihoods depend on a Highway Code for trade

Internationally, livestock integrated within farm-household systems and landscapes provide huge benefits. By-products of manure/urine become crop inputs enriching soils and composts, and potentially generating biogas and natural pesticides. Hides, skins, horns, wool and feathers sustain craft and utilitarian businesses. Livestock provide entrepreneurial farmers everywhere with valuable assets. They store wealth capable of natural capital increase and regular cash-flow generation with good management. They can utilise otherwise wasted crop by-products as feedstuffs or bedding. Extensively grazed animals maintain landscapes and countryside beauty required by civil society and tourism. Milk, meat and eggs greatly enrich human diets when taken in moderation, though they can cause obesity and associated diseases when consumed to excess (also losing food conversion efficiency compared to direct vegetable consumption).

In short, properly integrated livestock improve the energy-efficiency of farming systems, the quality of human diets, environmental management, the livelihoods of rural communities and the health of urban populations. By contrast, the trend towards large-scale, intensive livestock offers some 'economies of scale' to a point beyond which cheapness threatens animal welfare, disease proliferation (e.g. bird 'flu), environmental pollution (when manures and effluents become a cumulative problem rather than a strategic resource), livelihood risk, food safety and public health, and generates bureaucracy to seek to avert all these. The consequent stress on farmers is coupled with a drop in the overall energy-efficiency of farming systems with lengthened food chains. Moderate scale family farming aggregates production, protection and societal benefits.

Currently, many livestock farmers worldwide face huge livelihood challenges characterised by cost/price squeezes which produce lower margins per animal sold and ratchet up the trend to keep more animals per farm in order to try to compensate. Many livestock farmers have left, except where tiny numbers of livestock are involved on a truly subsistence basis such that their products scarcely enter the market system and feed inputs are largely home-grown.

This polarisation between tiny and huge livestock units most heavily eliminates medium-sized enterprises (arguably those most capable of giving the best aggregate benefits). Food chains lengthen as distances increase between concentrations of animals and concentrations of the consuming public, with additional transport and animal welfare implications. All this means extra cost and bureaucracy for EU farmers with tight regulation to minimise animal suffering during production, restricted journey times for live animals in transit, improved animal comfort, a ban on the burial of fallen stock and close monitoring of all this by vets and health inspectors. Corresponding legislation to require the upgrading of silage clamps and other buildings, while suiting good farmers' aspirations, is often introduced so quickly that they cannot afford to implement it and thus another farm is lost. Concentrated risks, as recently seen in the UK, can lead to shutting down large areas of the country following disease outbreaks like foot and mouth, and bluetongue; meanwhile, greater selective control approaches to already endemic diseases such as tuberculosis have so far been denied.

> Dumping chicken body parts unwanted by Western markets displaces many small farmers

The pressure for unregulated trading coming through the WTO is leading to the least-cost production of livestock, with immense ethical and practical problems. Countries best equipped to produce cheaply, owing to low labour costs combined with adequate infrastructure and logistics, are able to flood distant markets with animal products which have become commoditised. Production, transport, food safety and other standards associated with many of these systems fall short of those set for EU farmers to the considerable extra cost of the latter. Both the poorest tropical farmers and many welfare-compliant EU farmers are penalised by this far from level playing field. In West Africa, cheap chicken arrives from afar to sell at prices half that required to cover the costs of small-scale, private-enterprise, home-produced poultry, thus destroying farm livelihoods. In the poorest nations, dumping chicken body parts unwanted by Western markets (all but breasts and legs) displaces many small farmers. Furthermore, the industrialisation and commoditisation of animal production leads to huge wastage unbelievable to small-scale mixed farmers in Africa – such as the frequent killing of surplus young males. A third of the food we buy in the UK ends up being thrown away.

Dairy farms are in particular crisis: in the Isle of Wight fewer than 20 percent of the dairy farms existing a decade ago are still operating; in Iowa, USA, 5,000-cow herds are common. Yet Send a Cow has recently done studies showing huge positive impacts of a single cow on farm-household system vitality and viability in Uganda – and, in such integrated systems, the carbon-footprint (notably methane and manure) is offset by recycling, by fodder and tree planting such that over 5 years it is 2.5 times positive!

A long-term vision for agriculture requires a Highway Code for agricultural trade governance. This would consist of minimal but relevant national and international regulation to aggregate benefits and avert threats, delivering:

- Conserved, biodiverse landscapes producing food, with farmers 'there to care' for land;
- Vibrant rural economies adding value to food and non-food farm products;
- Networks of equitable, relational communities.

Professor John Wibberley is an agriculturalist and resource management consultant. He is Visiting Professor at the Royal Agricultural College and serves in RURCON, an otherwise all-African team of Christian Development leaders and practitioners in sub-Saharan Africa
john@wibbs.fsnet.co.uk.

Animals

Good animal welfare must be our starting point

Ruth Layton

A wise colleague once pointed out that "poverty is sustainable". So is poor animal welfare. As sustainability storms up the policy agenda, animals are all too often left on the margins.

Our job at the Food Animal Initiative (FAI) is to design, implement and promote sustainable food production systems based on good animal welfare. We talk about the 'three Es' for sustainable food production systems: they should be Ethical, look after the Environment and be Economically viable. By ethical we (and the Oxford English Dictionary) mean doing the right thing, and that means the right thing for animals as well as for people.

This is no mean task, so let's put it in perspective. In 2006, world-wide, 24 million pigs, 884 million poultry, six million cattle and 17 million sheep and goats were slaughtered for human consumption – every week. That amounts to an annual global meat production of 276 million tonnes. This is expected to rise to 465 million tonnes by 2050.

> Poverty is sustainable. So is poor animal welfare

Globally, eight percent of meat production is from grassland-based systems of beef and sheep (ruminants), compared to 46 percent from the landless or intensive production of pigs and poultry. To cope with increased demand for meat and other livestock products, livestock production is rapidly shifting from grassland-based systems towards more intensive landless production of pigs and poultry. Over the decade to 2001/3, pig meat output rose by 30 percent at world level, with the increase accounted for almost entirely by Asia. The total production of poultry meat grew by around 75 percent, again with the greatest expansion in Asia. In contrast, over the same period, ruminant production rose by 12.5 percent. This shift towards landless production is contrary to what FAI views as the most sustainable way forward for food production, which is a move to mixed agriculture that allows animal and crop production to benefit from each other.

Our approach is based on understanding the animal first and designing the system around this knowledge. We champion animals because their voice, though well-heard through animal welfare organisations, cannot be acted upon unless alternative high welfare systems are provided and promoted. We encourage farmers, industry partners and NGOs to understand what we call the 'sustainable potential' of a system and to put their energy into developing systems which have good sustainable potential as this makes business sense in the long term. This concept of sustainable potential is often difficult to embrace for large producers whose livelihoods have evolved around systems which have no sustainable potential but which are enjoying considerable current success.

A system with sustainable potential has to take care of people, animals and the environment whilst being economically viable. So, in animal welfare terms, such systems as the conventional battery cage or the farrowing crate are not an option. Science provides us with overwhelming evidence that these systems do not and will not provide for the needs of the animals involved. Although the major food buyers are increasingly aware of this evidence, the major driver for the move away from systems such as 'crates and cages' is that a significant proportion of their customers tell them they do not want food from these systems.

There are increasing examples of producers moving to systems with better welfare potential, such as free range eggs and pork produced from outdoor systems (which do not use farrowing crates), and there is a growing demand for pork from pigs that have not had their tails docked.

If we measure some of the high animal welfare-potential systems – free range egg production being a good example – in terms of a specific welfare outcome such as mortality, the system would often compare less favourably than a cage system. However, with scientific knowledge and best practice husbandry techniques, we can reach the full high animal welfare-potential of systems such as free range. By contrast, the confinement of a conventional cage means that birds will never be able to move about, investigate their environment and engage in activities important to them.

> Once producers move to high-welfare systems they don't want to turn back

The burning question is whether high animal welfare-potential systems also have sustainable potential in terms of economics, people and the environment? The short answer is that the proof of systems like free range lies in their growing market share. Anecdotal evidence tells us that once producers make the move to these systems, they don't want to turn back – the food they produce is as safe and often better eating quality. The environmental debate, of course, rages. Our work at FAI shows that such systems are the most environmentally sustainable as they have the potential to be integrated into mixed agricultural systems where animals and crops are grown side by side for the benefit of all.

Ruth Layton is a veterinary surgeon. She is a founder and Director of the Food Animal Initiative and currently sits on the Farm Animal Welfare Council, which advises government on matters relating to animal welfare
ruth.layton@faifarms.co.uk

Tara Garnett

Environment

Meat costs the climate but mitigation isn't simple

Our growing world is hungry for meat. According to the Food and Agriculture Organisation (FAO), demand in the developing world for meat and milk is set to double between 2002 and 2030. Population and per capita demand will rise. The rise in the developed world will be more muted but starts from a high base. The average Brit consumes around 44 grams of animal protein a day, compared with the developing world where consumption is less than half that, at 21 grams.[1]

Does this matter, environmentally? Yes, according to the FAO. In a major report on the environmental impacts of livestock farming it states: "The livestock sector emerges as one of the top two or three most significant contributors to the most serious environmental problems, at every scale from global to local."[2]

Livestock's contribution to climate change poses particular challenges. In the same report, the FAO calculates that livestock account for 18 percent of total anthropogenic greenhouse gas emissions. Cows and sheep burp a lot releasing methane, which has a global warming potency 21 times greater than CO2. Livestock of all kinds also release nitrous oxide, 300 times more potent than CO2. The 18 percent also takes into account carbon losses from land or forest clearance to make way for livestock rearing.

The FAO figure is global. The figure is high because agriculture is a relatively big player in the economies of many developing countries. In the developed world, where there are greater emissions from transport, manufacturing and domestic energy use, livestock make a relatively smaller contribution to overall greenhouse gas emissions even though in absolute terms (owing to greater animal numbers) emissions may be higher.

One EU report draws upon both top-down and bottom-up studies of the environmental impacts of products consumed in the EU, including food.[3] On the basis of environmental input-output calculations it concludes that the food sector in its entirety accounts for up to 31 percent of the EU-25's greenhouse gas emissions. Meat and dairy products account for about half of these food related emissions.

What about the UK? Using published data, it is possible to calculate that our production of livestock products in the UK contributes over six percent to the UK's greenhouse gas emissions. When it comes to UK consumption – taking imports into account – this rises to eight percent.

Of course, we also need to take into account the emissions that livestock help 'save.' If we did not eat meat or drink milk we would have to expend energy and emit greenhouse gases to produce substitute foods. Moreover, livestock provide us with leather, wool, manure (soil fertiliser) and other animal-based products; without them, we would have to grow or manufacture substitutes which again require energy to produce and will inevitably generate greenhouse gases. It is important to recognise too that livestock can and do make use of waste food and by-products that may be going spare, and graze on land that cannot not be used productively for any other form of agriculture. In other words, while livestock farming generates considerable volumes of greenhouse gases, it is undoubtedly the case that were livestock not being reared, greenhouse gases would still be emitted as we go about producing substitutes for the goods that livestock currently provide.

So, what can we do to reduce greenhouse gas emissions from livestock? Various approaches are being considered and adopted, largely in the developed world. One option is to modify the feed: for example, cattle fed more cereals and oilseed cake, and fewer fibrous foods such as by-products or poor quality grass, tend to produce less methane. Other approaches include breeding more productive animals (such as higher yielding dairy cows) meaning that fewer animals need to be reared per given quantity of milk or meat. More effectively managing the waste outputs of livestock rearing, mainly manure, is the focus of further activity. Indeed the manure can be anaerobically digested, with the resulting methane used as a fuel source.

However, some measures may have damaging consequences for animal welfare and raise the question of what our 'ethical non-negotiables' might be. Other measures may affect biodiversity. There may be 'second order' impacts to consider too, with negative consequences for climate changing emissions. For example, to what extent might livestock consumption of oilseed cake lead to further deforestation to make way for, say, soybean plantations?

We need to do our thinking with global population growth in mind. By 2050 the global population is projected to top nine billion. Demand for land, for food and for energy will grow. If land is used for livestock, however efficiently, it means that there will be less available to grow other food or biofuels. As a result, hungry people may be forced to farm on ever more marginal lands with – among other things – damaging consequences for carbon storage.

Bearing in mind the multiple pressures on land use, global increases in population, the importance of other non-climate-related environmental issues, the ethical obligation to care well for the animals we use and the limitation of technological-managerial solutions, a key conclusion we would draw is that if we are serious about tackling food-related greenhouse gas emissions, we need to consider making significant reductions in our overall production and consumption of livestock products, while seeking to maximise the benefits that livestock can bring.

Tara Garnett co-ordinates the Food Climate Research Network (FCRN) at the University of Surrey's Centre for Environmental Strategy. She has recently published a working paper for FCRN on the climate impacts of the meat and dairy sectors.
t.garnett@surrey.ac.uk

[1] 100 grams of chicken contains around 30 grams of protein.

[2] Steinfeld, H. et al. (2006) *Livestock's long shadow.* FAO.

[3] EIPRO (2006) Analysis of the life cycle environmental impacts related to the total final consumption of the EU25. *European Commission Technical Report* EUR 22284.

How should we farm animals in 2050?

What principles should underpin livestock farming in future? Where should we be in 40 years and how will we get there? We asked some of the people who influence how animals are farmed today…

Steven Tait

There will always be consumers who will buy on price – now and in 2050. But the more consumers are informed about animal welfare and the more the media continue to give highly effective voice to these concerns, the more the retail sector will react.

This is already happening. The growth in our own farm animal welfare scheme, Freedom Food, from seven million animals to 160 million in four years is just one indicator that retailer strategies are being increasingly driven by corporate social responsibility.

However, the industry will polarise between high-value, high-quality production, primarily based in this country, and more intensive systems, primarily based overseas, with cheaper food products imported into the UK. Again, this will be driven by retailers responding to the differing demands of their customers. In the UK, we need to focus on animal welfare, environment, quality, and provenance as our differentiators.

I hope that the welfare standards that livestock are reared to overseas will also improve, but it is likely that their standards will lag behind those of the UK. I doubt this will cause more consumers to move away from buying on price alone.

Continued improvements in the way in which we rear our livestock, here or abroad, require food production to be kept at the top of consumers' minds.

Transport of live animals is likely to be one of the most difficult welfare issues to overcome. It has been driven mainly by the closure of small abattoirs and it frustrates attempts to provide locally sourced products. The government must put resources into rebuilding and supporting local abattoirs to alleviate this problem.

Steven Tait is Head of Sales and Marketing at the RSPCA / Freedom Food Ltd.
www.rspca.org.uk

Matt Howe

Sustainability may be a buzz word for some today, however, as we look towards 2050, it is clear that it will become a part of our everyday lives and govern many of our day-to-day decisions.

In 2050, McDonald's will have just celebrated our 75th anniversary in the UK. If Big Macs and milkshakes are to continue as a feature of our menu, it is vital that we assure a sustainable supply chain, and the recent changes that we've made to our coffee offer are a good example of what I mean.

All the coffee we sell is Rainforest Alliance certified, served with British organic milk, making it one of the most ethical products on the high street. As well as delivering high quality beans, the Rainforest Alliance addresses both social and environmental criteria in their certification process. It is this holistic approach that sets it apart and makes it a sustainable, long term, platform.

The foundation of our business is the 100 percent British and Irish beef in our burgers. It is vital we make the same progressive moves to help establish a sustainable beef supply chain.

So will we see a similar certification programme for beef as we see in coffee? Possibly. What is beyond question is the need to develop a foundation for economic and ecological efficiency in conjunction with strong animal welfare standards. Eco-efficiency, as defined by the World Business Council for Sustainable Development, addresses many of these aspects.

It is this drive for Eco-Efficiency that I believe must underpin the beef industry as we approach 2050.

Matt Howe is Senior Vice President Chief Support Officer at McDonald's Restaurants UK.
www.mcdonalds.co.uk

Ken Laughlin

The last 40 years have seen rapid changes in world agriculture.This topic can only be addressed by making a series of assumptions about changes to 2050 which define a new ethos. These are:

- Animals will continue to be farmed for meat and milk and that fundamental animal welfare requirements are satisfied wherever this occurs.
- The fallacy of growing edible crops for biofuel production will have been exposed and will have ceased.
- In the key drivers for meat and milk production environmental impact will be a major component of economic evaluation.
- Therefore in animal production simple feed efficiency – food weight in, to saleable yield out – will have been replaced by specific efficiencies of energy, protein, phosphorous etc. This means that retention and excretion will be determined, and the latter has a major impact on global warming potential.
- Feed and energy-intensive meat and milk production will have been relocated to climatically suitable areas of the globe closer to the main grain and protein meal producing regions. These regions also require less use of primary energy in husbandry systems in order to maintain the health and welfare of the animals.

Thus food production will be driven by the need to feed people efficiently. Fundamentally inefficient production systems which may give a small minority of consumers a 'feel good' factor will have been eclipsed by a global production system that addresses the broader ethos of sustainable food production for all people across the whole planet.

Dr Ken Laughlin is Vice President of Policy and Strategy for Aviagen, which breeds poultry. He has provided technical advice to poultry farmers in all regions of the world
www.aviagen.

How should we farm animals in 2050?

Henry Buller

In 2050, we should be farming animals in an ecologically sound and morally acceptable way to produce meat and dairy products compatible with a healthy human diet. We are currently a long way from this, yet it needs to happen and I can see three drivers of change.

First, the amount of meat and dairy products we eat is going to have to fall dramatically. There is a growing concern for the human health and ecological consequences of meat production and consumption.

Second, the way we farm with animals is going to have to change completely. Within Europe, in particular, consumer awareness of animal welfare is on the increase. Farm animal welfare legislation is expanding while more and more animal products integrate welfare concerns through quality assurance mechanisms.

The third driver is substitution, whether through meat surrogates or through the synthetic production of meat protein. Although still in its infancy, this has the potential to reduce substantially our dependence on intensively reared animals in many foodstuffs.

Critically, these agendas need to work together; less meat and dairy, better animal welfare, more ecologically sound farming. The problem is that they don't work together, but in opposition. Moral absolutism clashes with individual freedom, while market forces turn ethical concerns into trade advantage; is it acceptable, for example, that differential levels of welfare should be a basis for market segmentation?

The environmental and land-use implications of more extensive husbandry systems are considerable, yet the moral objection to intensive husbandry is growing. What is needed is public debate. For too long, animal farming has been hidden from view and public scrutiny, largely because consumers have simply not wanted to know and other food actors have benefited from this. Making the animals more visible and acknowledging their lives is the first, essential step in a better direction.

Henry Buller is Professor of Geography at the University of Exeter, currently leading a major interdisciplinary research project on the links between grazing, meat quality and biodiversity. www.relu.ac.uk/research/projects/Buller.htm

Joyce D'Silva

If we continue down our current path, meat and dairy consumption will have doubled. The majority of farm animals will be housed, dairy and beef cattle will be zero-grazed. Biotechnology breeding techniques will produce highly productive animals.

The downside will be the health and welfare of the animals themselves. There is a definite correlation between extreme selective breeding and the fragility of animals. Basic hardiness will have been lost. Chickens will reach slaughter weight in less than five weeks, but lameness will set in at an earlier age and rates of sudden death syndrome will have shot up. The productive life of the dairy cow will be down to less than two lactations, as lameness, mastitis and infertility kick in ever earlier. Welfare will be a forgotten concept.

Methane emissions will have increased as will nitrous oxide. With animals being housed, ever more cereals will be needed to feed them, so more nitrogen fertilisers will be used. Fields which once held grazing animals will be converted where possible to arable for feed crops or for biofuels. Obesity, type 2 diabetes, heart disease and diet-related cancers will have soared in the human population.

We can do it differently. We can radically cut our meat and dairy consumption. Meat will be viewed as a treat and people will buy only high welfare products produced on mainly organic or mixed, free range farms.

Fewer animals overall will ease greenhouse gas emissions. Animals will be bred back to resilience and slower growth rates. Dual purpose dairy and poultry breeds will be common. No animals will face an early death due to their gender. All animals will have outdoor access, their bodies won't be mutilated and long distance transport will end as on-farm or near-farm slaughter is revived with the aid of new technologies. Human health will improve as we all eat a more plant-based diet.

We all have a choice to make. I know which scenario I would choose!

Joyce D'Silva is ambassador for Compassion in World Farming. www.ciwf.org.uk

Number crunching

In 2006, globally, we slaughtered 24 million pigs, 884 million poultry, six million cattle and 17 million sheep and goats – every week. That adds up to 276 million tonnes of meat, with demand expected to reach 465 million tonnes by 2050. The livestock sector employs 1.3 billion people worldwide but in the UK only accounts for about 0.5 percent of the economy, with meat amounting to about half of that. The livestock sector contributes eight percent of UK greenhouse gas emissions by consumption and about 18 percent of global emissions, 35 percent of which are down to deforestation. Meat consumption ranges from an average 36 grams a day in Sub-Saharan Africa to 218 g/d in the UK and 342 g/d in the US – equivalent to three quarter-pounders.

References at www.foodethicscouncil.org

Nicholas Saphir

At the beginning of the 1960s we spent around 28 percent of our disposable income on food and drink. Food shortages and rationing were of recent memory, chicken and salmon were luxuries. Today we spend less than 12 percent. Intensively reared £2 chickens and farmed salmon are now staple foods.

Range, innovation, functional benefits and quality are already becoming the drivers of choice with price becoming less important. Animal welfare matters and focus groups continue to influence UK legislation. But many consumers still buy intensively reared poultry, eggs, dairy products and imported veal.

So what will change over the next 40 years? The developing world will continue to demand more animal protein as disposable incomes increase. Animal welfare will not be a major concern for those who will be enjoying a full diet for the first time. For the developed world, campaigns against obesity and increasing awareness of the environmental damage caused by livestock production will be the key drivers that move food consumption towards quality rather than quantity. Here animal welfare will be of growing interest to consumers but come second to quality and environmental cost.

Where does that leave UK farming? The trend away from a price-based, volume-driven culture is good news, though it will challenge many who have based their business model around commodity production. Our growing understanding of environmental costs may surprise us: 'seasonality' and 'local' may be easy catch-words to focus our thinking, but we do not yet know whether evidence will support a return to basics. The true environmental cost of shipping 'out of season' produce, even refrigerated, may prove to be far lower than the environmental cost of 'in season' local alternatives. If environmental evidence supports a move towards long-life milk and consumers accept the call, the whole UK dairy industry could change, with a resurgence of low cost spring production. If reducing pollution from livestock requires fundamental changes in feeding regimes towards or away from grass fed production, the challenge to UK farming could be fundamental.

We have much still to understand. However, what is important is that with change, especially a move towards quality, innovation and environmental improvements, comes opportunity. The end of production subsidies was just the start of a UK farming revolution that will require change to be embraced rather than feared.

Nicholas Saphir is Executive Chairman of OMSCo, the organic milk suppliers' co-operative. www.omsco.co.uk

Colin Tudge

If things go on as they are then we've had it. By 2050 much of our farmland will be under water and what's left will be used for livestock feed or biofuel. Most people will not be fed at all (and sombre politicians and intellectuals will tell us the world is overpopulated).

But we could in the next few decades establish agriculture that is actually designed to feed people. In my latest book, *Feeding people is easy*, I call this 'Enlightened Agriculture'. The focus would be on staples, grown on the arable scale, plus varied horticulture. Animals would be slotted in wherever they were complementary: sheep and cattle fed primarily on grass and browse, in places where food crops are hard to grow; pigs and poultry fed on surpluses and leftovers. The systems would be intricate and hence labour-intensive – all economies should have a strong agrarian base. Husbandry, including animal welfare, would be excellent. Such farms would produce 'plenty of plants, not much meat, and maximum variety' – which in nine words summarises modern nutritional theory and is the basis of all the world's great cuisines.

But if we (humanity) are to achieve Enlightened Agriculture, then we have to take matters into our own hands. If we rely on the present-day powers-that-be with their crude, obsessively monetised and ruthless economy, then we are dead. We need a people's buy-out of the world's food supply chain. With a growing band of friends, I'm working on it.

Colin Tudge's latest book, *Feeding people is easy*, is available from Pari Publishing. You can find out about his buy-out at www.colintudge.com

Temple Grandin

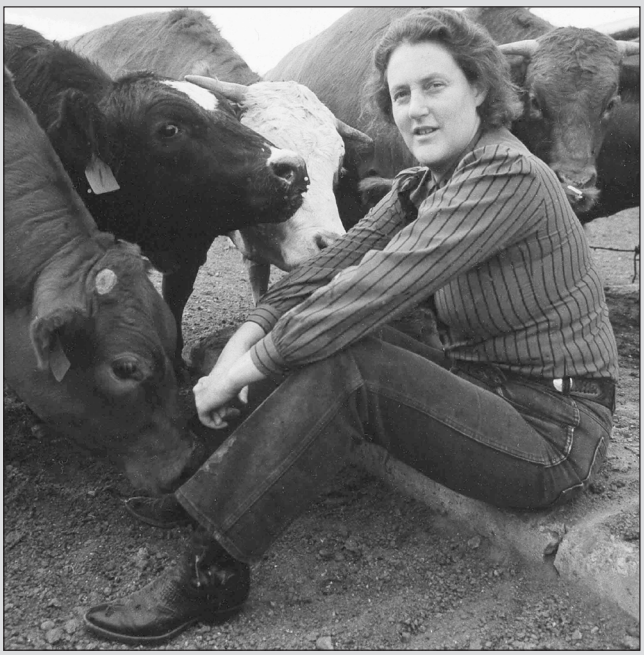
The most powerful engines that drive change are economic. The tremendous purchasing power of large food companies can bring about huge improvements. In 1999 I implemented animal welfare audits of the US slaughter plants that supplied McDonald's Corporation and Wendy's International. During that year I saw more improvements than I had seen in a 25-year career prior to it. When major meat buying customers insisted on improvements, major changes occurred.

How was change brought about? Activist NGOs bring attention to animal welfare issues but, if that is where things stop, the executives of most corporations treat such concerns as abstractions to be left to their legal or public relations department. I took executives on their first tours of farms and slaughter plants. When they saw good practices they were pleased and when they saw emaciated, neglected animals they were horrified. Welfare was now no longer an abstraction and they implemented changes.

To direct these huge economic forces into changes that work requires people to work on farms and slaughter plants to develop practical new systems. We need lots of young people to work in the field to implement new farming systems.

I have worked for over 35 years designing and implementing practical systems for handling animals. Legislation and policy making that occur in cities far away from farms are not enough to make real, effective improvements.

Temple Grandin is a professor of animal sciences at Colorado State University. Half the cattle in the US and Canada are handled in equipment she has designed for meat plants. lamar.colostate.edu/~grandin/



How should we farm animals in 2050?

Jason Matheny

I hope and expect that by 2050 livestock production will be in global decline, with meat replaced by cleaner, healthier, and more efficient meat substitutes. Each year, 50 billion land animals are raised and killed to feed humanity. The use and welfare of these animals has rightly become the focus of intense debate. Livestock production destroys wild habitat, wastes natural resources, contributes to climate change, and causes many human diseases.

Fortunately, there is significant progress in developing technologies to replace livestock. Plant-based meat substitutes have improved markedly over the last decade, and their market share is now doubling every five years. Thanks to advances in food chemistry, it should soon be possible to produce plant proteins indistinguishable from ground meat.

Producing meat in vitro, in incubators rather than in live animals, is technically feasible now using tissue engineering techniques, and research is proceeding to make it economical. Eventually the world's meat supply could be produced from a few cells. We should accelerate the development of these technologies, so that we can decrease livestock production and its numerous insults to human health, environmental quality, and animal welfare.

Jason Matheny is the director of New Harvest, a nonprofit research organisation working to develop new meat substitutes, including meat produced in a cell culture rather than from an animal. www.new-harvest.org

Richard Lowe

In 2050 meat and dairy products will still be a vital component in a healthy balanced diet for the majority of consumers. However, UK production may have significantly reduced and tracts of grazing land may have been converted to arable production.

Our UK production values will be to farm animals in a welfare and environmentally friendly manner to provide safe, traceable wholesome food.

Climate change and consequent weather volatility will make food supply less certain and, to mitigate this risk, food policy will need to become more cautious. There will be greater pressure to maximise agricultural land usage for cereal production (and to a lesser extent bio-fuel) and for countries to ensure they have a secure food supply.

There will be competition for land use and, in the UK, this will maintain high values for agricultural land. For tracts of lowland grassland in the UK, the opportunity cost of not putting this grazing land into cereal production or bio-fuel production may be too great to pass up. Livestock grasslands could therefore become largely restricted to those areas not suitable for arable production.

The process of change will be gradual because a significant number of people farm livestock for reasons other than making a profit. But undoubtedly our livestock sector will shrink in size and be divided between small part-time hobby farmers and big, highly efficient meat and dairy units. The big units, which will be the most efficient and environmentally sustainable, will not subsume all the smaller units because the value of land in the UK will be too high for this to happen.

So UK livestock production will be a smaller industry but producing higher quality, welfare friendly and environmentally friendly products.

Richard Lowe is Chief Executive of the UK Meat and Livestock Commission. www.mlc.org.uk

Richie Alford

Meat and dairy products have been an essential aid to human survival and a major driver of development.

Over the last 50 years, animal productivity in the developed world has increased significantly in response to demand. This has been at the expense of the well-being of the animals themselves and also the livestock keepers. The environment has been plundered to fuel this production.

In addition, the gap between rich and poor has grown, both within national boundaries and across them. Over-consumption of meat and dairy products has contributed to significant health concerns.

So, in contrast with today, meat and dairy production in 2050 should be based upon production and marketing systems that are equitable. Laws will ensure that the poor in our global society have sufficient access to meat and dairy products to achieve a balanced and nutritious diet. The rich will be satisfied with sufficient. In a dominant global market economy, the key issue will be 'getting the price right': ensuring a just and fair price is paid for all products, reflecting social, environmental and production costs.

The laws will be based upon good stewardship of the earth's resources, optimising resource use locally, avoiding excess resource movement or dumping (such as stock movements, air pollution, nitrogen leaching, etc). The rights of livestock and their keepers to a comfortable life will be upheld. Shorter food chains will ensure closer connections between consumers and producers, stricter control and higher quality.

Richie Alford is a member of the International Programme Team of Send a Cow, responsible for supporting the programmes in Southern Africa. He was born and raised on a dairy farm in Devon. www.sendacow.org.uk

Animals versus the environment

Is animal welfare a luxury in the fight against climate change?

Kate Rawles *finds you can't solve a problem with the same thinking that caused it…*

There is no such thing as ethics-free farming. Farming by its very nature affects animals and other living things, ecosystems, and people's health and livelihoods. Explicitly or not, it cannot help but take a position on what these effects and relationships should be – on how these various 'others' should be treated. And we are all party to this in-built ethics, because we all eat the products of farming.

This is not a comfortable place to be. The development of husbandry systems that keep large numbers of animals in confined conditions has led inexorably to animal welfare problems that are systematic rather than the result of occasional bad management. The recent UN Global Environment Outlook report confirms – again! – that the way modern societies meet their needs is damaging the world's ecological systems to such a degree that our own future is in jeopardy; and that the way these societies supply themselves with food is amongst the most significant causes of this ecological mayhem. What's more, despite our immense impact on animals and the environment, the human species has not even succeeded in meeting its own basic needs, with one in five people across the world suffering malnutrition and about the same number – in excess of a billion people – lacking clean drinking water.

My focus here is on the environment and animal welfare. In particular, I'm concerned by recent suggestions that animal welfare may have to be compromised to help tackle climate change. Unpacking the ethics behind industrial farming reveals that this is as misplaced as trying to promote traffic calming through motorway expansion.

Earth audit

The recent United Nations 'Earth Audit' ought to be shocking. It isn't, but only in the sense that we've heard it all before. Like the earlier Millennium Ecosystem Assessment (MEA) report, it tells us that the speed at which humans have used the earth's resources over the last two decades has put "humanity's very survival" at risk.[1] Key factors in the degradation of natural systems that support life on earth include habitat change, climate change, invasive species, over-exploitation of resources, and pollution such as nitrogen and phosphorus.

In all of this, agriculture plays a critical role. More land has been claimed for agriculture in the last 60 years than in the 18th and 19th centuries combined. An estimated 24 percent of the earth's land surface is now cultivated. Water withdrawals from lakes and rivers have doubled in the last 40 years, so humans now use between 40 percent and 50 percent of all available freshwater running off the land. And, of course, there's climate change. The United Nations Food and Agriculture Organisation argues that livestock, primarily cattle, are responsible for nearly one fifth of the world's entire human caused climate change emissions[2] – that's more than every plane, train, car, motorbike and skidoo on earth.[3]

In sum, industrialised societies, of which farming systems are a key part, are unsustainable. This way of living is promoted across the world as what it means to be developed, successful, progressed. Yet this way of living, and the values, ethics and worldview that go with it, simply cannot be sustained into the future without ecological collapse. It cannot be shared by 6 billion people, let alone the projected 9 billion. As the WWF Living Planet Report puts it so powerfully, if everyone enjoyed the lifestyle of the average Western European, we would need three planet earths.[4]

So where do we go from here? Steven Hawking has seriously suggested searching for other planets. Remaining earthbound, one approach is to try to technofix the problem – to increase efficiency and reduce waste to such an extent that we can retain industrialised lifestyles, and share them, without causing ecological meltdown. Huge efficiency gains can certainly

Dr Kate Rawles is an environmental philosopher. Having lectured for nine years in philosophy at the University of Lancaster she now runs courses in Outdoor Philosophy. She is a member of the Food Ethics Council.
kate@outdoorphilosophy.co.uk

be made. But even the most optimistic assessments of what can be achieved in this way do not allow us to roll out the current conception of what it means to lead a 'developed' lifestyle across a population of 6 billion people. Most analysts argue that, in industrialised countries, climate change-related energy consumption needs to come down 80-90 percent in the next ten or at most 15 years.[5]

Worldviews

So what's behind the pickle we're in? In part, how we see the world. If we really want to make a go of 'one planet living' we need to change our worldviews, and the ethics that go with them, in three main ways.

iStockphoto © Steve Mann

a) Infinite earth and frontier ethics

First, modern industrialised societies are inclined to see the earth as a "sort of gigantic production system, capable of producing ever-increasing outputs",[6] or as a vast repository of resources. Crucially, this earthly production system or repository is often assumed to be infinite – both in terms of its capacity to provide us with resources and its capacity to absorb the pollution that our consumption of resources produces. This means that industrialised societies tend to operate in ways that ignore unavoidable truths about biophysical systems. Some forms of farming, astonishingly, have to be included in this. Ray Anderson describes this as "the linear, take-make-waste industrial system, driven by fossil fuel derived energy," operating as if the environment has no limits.[7] This kind of mindset inclines us towards 'frontier environmental ethics', which tell us to make the most of these resources. Grab as much of them as you can, as fast as possible!

The first change on our agenda, then, is to acknowledge that the earth's biophysical systems have limits. We cannot endlessly extract resources at one end and endlessly emit pollution at the other without consequence.

b) The allotment mindset

Acknowledging these environmental facts takes us to what has been called 'shallow' environmental ethics. This tells us that resources are finite and that we really do need to look after them. It asks us to act within the earth's limits: to use finite resources carefully and not to overuse renewable ones. Our responsibilities towards the environment, in this view, are those of carefully managing a suite of natural resources in our own interests and those of future generations.

Constraining our activities in relation to the earth's limits is clearly crucial. But shallow environmental ethics, important though it is, is not enough.

For one thing, it doesn't challenge another of our worldview's assumptions – that humans are somehow on the edge of ecological systems. This is the allotment mindset. The environment is out there, and we go out and take from it when we need to. We have to look after it – but we are not really in it. An extraordinary techno-optimism – the view that sooner or later we won't need to be so careful because we will find ways of manufacturing our own resources – sometimes accompanies this. So long, earth, and thanks for all the fish – but now we can make our own.

This, of course, is absurd. So the second key change in our mindset is to acknowledge that we have a much more profound relationship with natural systems than the need to marshal them as a set of resources from a position of detachment. We are not on the outside of ecological systems looking in. We are part of ecological systems, not apart from them. Our experience of life may distance us from the source of all our basic needs in ecological systems. But however many layers of technical brilliance intervene between natural resources and our end products, we cannot detach ourselves from our ultimate dependence on ecology. For all our technology, we remain earthbound creatures, relying on ecological systems for our basic needs, as the MEA report points out.

c) Human-centred, resource values

The third worldview problem is the view of earth and other living things as a vast store of resources for humans. This is at the heart of shallow environmental ethics. The ecologically informed version of this mindset recognises biophysical systems as a source of resources and of other 'ecological services' such as clean air and water. A sophisticated version of shallow environmental ethics could even take interdependence on board, accepting that we are part of ecological systems and that harm done to them will rebound on ourselves. But the bottom line is the same. The value of other living things, of habitats, of ecological and biophysical systems is considered to be instrumental, and only instrumental. Any value they have exists only in relation to their usefulness, in various ways, to us: and this is our sole reason for caring about them.

Of course, the environment is a resource for humans, and like all species, we have to relate to it partly in this way. But it is not only a resource. The vast complex of astonishing diversity, energy and sheer will to live that is 'the environment' has value far beyond its usefulness to us. Basking sharks and blue tits, savannas and rainforests, clouds, stars and streams have value beyond the extent to which one species amongst millions happens to need them. To deny this is to take an astonishingly arrogant stance, positioning humans as the only species of true worth and the rest of relevance only in relation to ourselves. This is a pre-Copernican view of ethics; the values equivalent of believing the sun spins round earth.

The third key change is to acknowledge the intrinsic as well as the instrumental value of other living things and systems – and to act like we mean it. We can call this 'earth ethics'. Earth ethics tells us that the ultimate source and measure of value is not ourselves, and certainly not our economic systems, but the bigger context of which we are a part – the earth itself on which we, and our economies, inescapably depend. We are, in effect, part of a community and for it to continue working, and the members of it flourish, we need to act accordingly. A pragmatic sensitivity towards others in the face of interdependence and a deep respect for others in their own right are implied by the community metaphor.

More of the same only louder

So what about the argument that further intensification of animal based agriculture will be a necessary part of our response to climate change? Is climate change so urgent animal welfare becomes a luxury we simply cannot afford?

Leaving aside the highly contested question of whether further intensification and the correlative continued high dependence on fossil fuel based energy will actually enable us to reduce our carbon footprint, it should already be clear why this suggestion is so profoundly mistaken. The worldview and ethics identified as contributing to environmental collapse are exactly the same as those underpinning the problematic treatment of animals in intensive farm systems.

Like any major industry, the primary goal of modern livestock systems is to maximise profit. One way to do this is through economies of scale – making farms larger and keeping more animals on them, managed by fewer people. If the animals are confined, less of the food fed to them is 'wasted' by the animal moving around, and more is turned into meat or eggs. The result is highly mechanised, industrial-scale systems that keep enormous numbers of animals in confined situations. Attendant animal welfare issues include severe reduction in behavioural repertoires, boredom, stress, social deprivation or social crowding, high levels of surgical and drug based interventions, stereotypical behaviours, and other 'vices' such as tail biting, as well as pain and fear. These problems are not caused by individual farmers, but are the inbuilt logic of the system that so many farmers are now part of.

Animals in these systems are viewed and treated as components in a production line. They are part of a process that aims to turn animal feed into human food as efficiently as possible. 'Advances' in modern farming methods mean we no longer have to understand and respect animals as sentient living beings to achieve this. The underlying ethic of this kind of farming endorses this treatment of animals as commodities or things rather than as living, feeling, experiencing beings.

So the treatment of other animals and other living things purely as human resources, as things or products, is at the heart of both problems – environmental and animal welfare. And, as Einstein said, you can't fix a problem with the same kind of thinking that caused it. Dealing with climate change by bringing about more of the same can never work. Intensifying agriculture as a response to climate change cannot be the solution. It is as if, having learned that a loud noise is making us deaf, we respond by turning the sound up even higher.

Big bold solutions

The wake-up calls of climate change, the accelerated extinction of our fellow species and systematically poor levels of animal welfare have a shared root cause in the mindset that sees others in purely instrumental terms as a set of resources for humans, and ourselves as detached and separate managers of these resources. These issues are all connected and cannot be tackled separately. To take them together is to see that industrialised societies are heading in the wrong direction and that profound changes are needed.

Farming is both implicated in this and strongly positioned to show the way forward. Farming affects all of these issues. And we all have a stake in its future. What sort of farming with what sort of ethics, underpinned by what sort of worldview, do we want? One that leads towards ecological disaster or one that leads us towards a saner, healthier, fairer future for all? The general answer is clear. To get there, we need to understand ourselves as members of a living ecological community in which others are treated with respect. This does not mean treating them as sacrosanct and unusable but it does mean treating animals as sentient beings with social, behavioural and other needs, and it does mean working with the grain of living systems rather than against, ensuring that farming is compatible with biodiversity and minimising its climate change impact.

What this means in practice is being worked out by some of the farmers and researchers contributing to this magazine, and many others. One repeated conclusion is that, overall, the world's farming needs to involve fewer animals, leading a higher quality of life. This apparently goes against consumer demand. We are told that consumers want more, cheaper meat. But we also know that this is not compatible with a sustainable future in any sense of that phrase. Consumers as citizens clearly do want there to be such a future. Sooner or later this will be translated into market demand. Farming is compelled by business imperatives but in addition it can and should demonstrate leadership here – ethical and sustainable leadership. It should promote agricultural systems based on respect for other forms of life because that is the right ethic, and also because we need to think like that to continue our tenancy on the planet.

And farming can help us experience as well as know what this means. We can intellectualise ourselves into a better environmental ethic only so far. We need to feel it too. Modern ways of living leave us feeling disconnected from ecological systems and other forms of life. Anyone who has been involved in the husbandry of fulfilled animals on farms that co-exist with a rich diversity of wild species knows how truly and powerfully farming can reconnect us with meaningful, sustainable and ethical ways of making our living on this, one, earth.

[1] This article is based on a chapter in *The future of animal farming*, edited by Marian Stamp Dawkins and Roland Bonney, to be published by Blackwell in 2008.

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Roland Bonney

Meat production

We need mixed farming not single-issue solutions

There is a saying: 'Live life as if you will die tomorrow; farm like you will live forever'. As far as farming goes, this is more than a nice idea – it is an absolute necessity if our grandchildren are going to be able to produce the food they need and not just inherit a denuded asset that we have raped for short term benefit.

Technical innovation has driven agricultural development. With the advent of new breeding technologies, herbicides and veterinary drugs we can achieve growth rates and silage yields that were previously thought impossible. We combat diseases that were once devastating. Some of this – perhaps much of it – can rightly be seen as progress. Yet it has turned us into an industry that believes there is a quick fix for every problem. There is not. We cannot expect to increase output year on year to feed a growing demand, maintain profits and reduce costs simply based on new inventions. Nor should we pretend the best answer to the challenges around livestock farming – for the environment, for health, for livelihoods and for animal welfare – lies just one step along the technological treadmill.

> We should not pretend the best answer to the challenges around livestock lies just one step along the technological treadmill

Our focus must now shift from being obsessed with more production to truly meet the environmental and ethical demands of today. We must never confuse good land management with good business – they are distinct and, despite overlaps, do not always match up. This is a challenge for business structuring. Farmers who find new ways of working the land which reflect risk, investment and asset values, will deliver huge benefits. Generally speaking, mixed agriculture is the best approach for healthy soils and land use, but it is not always the most efficient in terms of labour, skills or equipment use.

By mixed agriculture I mean integrating animals on land which is used for cropping in a rotation, such that fertiliser and fuel (both which are derived from fossil fuels) are reduced at the same time as the farm produces quality animal protein.

A study in the US has shown that farmers can help countries meet targets for reducing greenhouse gas emissions by storing carbon in their fields through no-till farming.[1] If this idea were taken a little further to include grain production in a rotation with livestock and alongside tree planting, we would see all kinds of benefits such as carbon sequestration, reduced nutrient loss, more efficient water use and the provision of enriched farm environments where animals could be kept without trimming their beaks or removing their tails.

What steps will help us move in this direction? The first, I believe, is for both the industry and policy makers to agree there are no silver bullets. Single-issue thinking blinds us. It is vital to see the whole picture and not focus on facts taken out of context such as 'ruminants emit methane' or 'intensively kept animals convert feed more efficiently than extensively kept animals'. Mixed agriculture has the potential to provide us with sustainable food production systems. Let's look for solutions for how we can make it work.

Second, we need to welcome the challenge posed to industry by growing consumer awareness of livestock farming's footprint. We must demand a transparent food chain with explicit advertising and marketing standards, where people get what they think they are getting. We can talk forever about reconnection, communication and transparency, but the litmus test is simple: if you're worried how consumers would react if they saw your operation, then you're doing it wrong, whatever 'the market' is telling you.

This approach requires a significant mind shift – 60 years ago farmers responded to the call for more and cheaper food – we can respond again to the need for environmental care and good animal welfare if we understand the issues.

Third, then, farmers must know the facts. We need to understand for ourselves the science and evidence of climate change, water shortages and animal welfare, so that we can take informed decisions that are appropriate to our own farm. Only in this way can we deliver reliable, sustainable solutions and become the credible, relevant and authoritative voice we ought to be as the primary food producers and custodians of the land and animals in our care.

> If you are worried how consumers would react if they saw your operation then you're doing it wrong, whatever 'the market' is telling you

To understand the facts fully we cannot just look to science. We also need to talk to our final customers, the public, to really grasp the environmental and ethical challenges we face. If we want to make wise investments we need direct, informed dialogue with those who ultimately eat our products.

As farmers we have to show leadership and start to hold the rest of the food chain to account – not just see ourselves as victims of circumstance. If people want secure, sustainable supplies of affordable food we have to show the way, not based on past self-interest but on future opportunities and needs. We need to farm like we'll live forever, and we can't wait until tomorrow to start.

Roland Bonney has more than twenty years of professional farming experience in New Zealand, Australia and the UK. In 2000 he co-founded the Food Animal Initiative.
roland.bonney@faifarms.co.uk

[1] Kloeppel, J. (2007) *Beneficial effects of no-till farming depend upon future climate change*. Press Release, University of Illinois at Urbana-Champaign, October 14.

Meat consumption

If government can take on flying it can take on meat

Russell Marsh

Meat and dairy consumption accounts for around eight percent of UK greenhouse gas emissions – not far off the contribution from aviation. But, in the debate about climate change we don't hear much about meat's carbon impact; it doesn't make headlines or form part of policy proposals.

Yet this will change. The climate change bill, announced in the Queen's Speech in November, will lock this and future governments into legally binding emission reduction targets to 2020 and 2050. Given that UK CO2 emissions are currently rising, meeting these targets for a 26-32 percent reduction by 2020 and a 60 percent reduction by 2050 is going to be very challenging. Reaching these targets is going to require action in every sector of the economy. Both aviation and farming will have to be a part of this.

Despite a similar level of emissions, aviation gets more attention than meat and dairy. Though the UK government was initially hesitant to tackle people's 'freedom to fly', it is now leading European efforts to bring aviation into the EU Emissions Trading Scheme and it has recently announced that it will levy a 'carbon tax' on planes leaving the UK. And industry is responding. Airlines are falling over themselves to be seen as the greenest, while the Soil Association and major supermarkets are grappling with the environmental and social footprint of air-freighting food.

> There are precedents for intervening in peoples' lifestyles where there is a clear public benefit

By contrast, there has been little fuss about meat and dairy. Why? Because it is highly sensitive. Diet is an emotive, personal issue and most people don't want the government telling them what they should and shouldn't eat. The worry is that the only way to tackle this issue is to try and persuade people to be vegetarian or vegan. This would be politically impossible.

But, as the recent actions on obesity and smoking have shown, and indeed the action on aviation, there is a precedent for intervening in people's lifestyles where there is a clear public benefit.

So what can we learn from action in these two areas that may help in developing appropriate interventions for the meat and diary sectors? The smoking and obesity debates show us two things. First, that the links to health are important, and may, for food, be a stronger driver for action than climate change. There is plenty of evidence that a more balanced diet containing less animal protein is better for you. A communications initiative linked to the health benefits of a diet lower in animal protein is likely to have more resonance than one purely focussed on the carbon impacts.

The second thing they show us is the importance of information and evidence. If the government is going to take action it needs a robust evidence base to justify any intervention. For obesity and smoking this evidence was readily available and is now broadly accepted by the public. The same cannot be said for the carbon impacts of our food, although this is starting to change: research in this area is starting to provide some compelling figures.

Likewise, if the government wants individuals to take a particular action – eat healthier food for example – they need to provide us with the information that enables us to make the right choices. This in turn will help drive the market in the right direction. In nutrition this is happening though food labelling. Retailers and producers are now producing, selling, and advertising more nutritionally balanced products.

Labels are being introduced specifying the carbon footprint of food under an initiative by the Carbon Trust. A number of retailers and individual food companies are starting to calculate the carbon footprint of the products they produce and sell. This is giving the industry much better information about the carbon emissions associated with their products and where in the supply chain those emissions arise. Not surprisingly, several have discovered that the big carbon impacts come from producing the raw materials. Often this means meat and dairy. As this evidence base develops it will increase the focus on the need to tackle greenhouse gas emissions from the livestock sector.

So, things are starting to happen. It is likely that the combination of the Climate Change Bill and carbon footprinting food products will increase pressure to take action in farming. Yet this is unlikely to be enough. Look again at the aviation industry. Information on the carbon implications of flights alone does not change the frequency with which people fly. The question for meat and dairy is whether the government will be bold enough, as it has been in other areas, to respond to the evidence and intervene further.

> Will government be bold enough to intervene over meat and dairy?

It could start with the food provided through its own institutions and on the public estate, and commit to reducing the animal protein content (or the carbon emissions) of the meals served. And perhaps the time has come to consider how to introduce a carbon price into this market to focus the industry on developing low-carbon solutions. Whatever the government chooses to do, it will have to do something – it cannot ignore this sector any longer.

Russell Marsh is Head of Policy at Green Alliance, which works with senior people in government, parliament, business and NGOs to make environmental solutions a priority in British politics.
rmarsh@green-alliance.org.uk

Steve Suppan

Meat trade

Food safety needs a new global fund

The Food and Agriculture Organisation (FAO) is right to be nervous about the environmental and social consequences of the expanding world demand it projects for livestock products.[1] Yet it should be more worried still about the negative feedbacks – for example food-borne illness and animal disease – that may stop the meteoric rise of meat and dairy in its tracks. It is in everyone's interest to ensure that international trade in this sector is better governed.

The first step to better governance is to account for such feedbacks and for the full costs of industrialised animal farming on the environment, public health and rural employment. Food safety is a case in point.

Perhaps a third of developed country residents and a greater portion in developing countries are affected by food-borne illness at least once a year. About three quarters of disease-causing pathogens are to be found in meat, poultry and dairy products. A relatively small number of pathogens, such as Salmonella and Campylobacter, account for the majority of reported cases of zoonoses (animal to human disease transmission). Well-resourced governments can focus surveillance and intervention to prevent or mitigate outbreaks of well-known pathogens.

However, pathogens evolve in prevalence and severity, increasing the difficulty of targeting measures to protect human and animal health. Pathogens in today's headlines, such as E coli 0157:H7, were unreported thirty years ago. The intensification of livestock production in concentrated animal feeding operations (CAFOs) may have led to low-pathogenic viruses, such as that causing avian influenza, to become highly pathogenic.[2]

Yet FAO and OECD, in their agricultural outlook for 2007-2016, assumes "'normal' conditions for the meat sector, which is to say an absence of animal disease outbreaks and no explicit accounting of animal disease restrictions on production, trade or consumption".[3] It also assumes CAFOs will be the rule, not the exception, as the sector expands.

Combining these assumptions – more CAFOs and less disease – makes heavy demands of international governance. These demands are not being met.

The problem is this. CAFOs rely on the pre-emptive use of antibiotics, primarily in animal feed, to ward off contagion. Since the World Health Organisation (WHO) has identified antibiotics in animal feed as a contributor to growing human resistance to antibiotics, the Codex Alimentarius Commission, a joint WHO/FAO programme, has undertaken work to develop standards that would facilitate trade in meat and dairy products from animals given such antibiotics. Yet, rather than make recommendations on animal welfare or Good Agricultural Practices (GAP) to de-intensify livestock production and reduce the need for antibiotics, Codex's mandate confines it to setting a standard on the maximum residue level (MRL) of a veterinary drug in livestock products for human consumption. Such MRLs are the result of an FAO/WHO risk assessment – a negotiated scientific consensus – and, even if MRLs are respected, the antibiotic resistance worrying the WHO could worsen.

> No mechanism currently exists to steer us towards the win-win

From a trade policy perspective, there is more incentive for countries to use Codex standards, which are recognised as presumptively authoritative by the World Trade Organization (WTO), than GAP or animal welfare practices, which are not WTO recognised. No multilateral policy mechanism currently exists to steer us toward the win-win, which is better agricultural practice, fewer CAFOs and fewer antibiotics.

But that's not all. Many developing countries are not only unable to implement Codex standards, but often have not estimated the costs of meeting export requirements or evaluating the safety of imported foods. The current terms of WTO-coordinated 'Aid for Trade' do not extend to providing the needed infrastructure or training for personnel.

FAO, WHO and others have recognised that global supply chains for products of animal origin globalise sanitary and phytosanitary (SPS) risks. Although SPS measures to mitigate these risks are recognised as global public goods, their financing continues to be ad hoc, and is usually triggered by trade concerns. In the time it takes to raise an international voluntary fund to do surveillance and begin mitigation or containment of a transborder contagion, the costs of successful intervention often increase steeply.

In theory, the costs of SPS measures should be internalised in food and livestock prices. Yet, without government intervention, primary producers have little market power compared with processors and traders, and hence seldom receive a premium for implementing the standards required of them. Even if farmgate prices internalised such costs, there is no current mechanism to finance the public health mitigation costs resulting from transborder foodborne illness. As food products become more globalised, like the hamburger derived from carcasses from five or six different countries, the need for a permanent Global SPS Fund becomes urgent. The financing mechanisms for such a fund need not be limited to the template of governmental contributions to a Global Environmental Facility, but could take advantage of recent innovations in public finance.[4]

Continued reliance on ad hoc and underfinanced SPS systems will wreak havoc not only on public health, but also on the meat and dairy sectors. Without full cost accounting and a well-financed SPS regulatory system, ongoing investments in intensified meat and dairy production could well make that supply chain unsustainable.

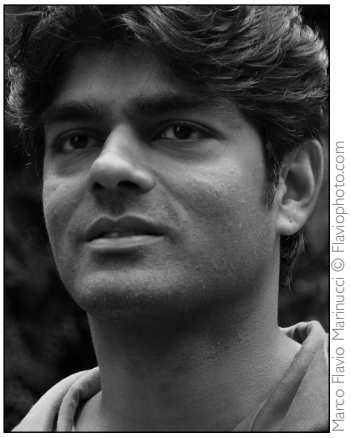
Dr Steve Suppan is Senior Policy Analyst and Director of Research at the Institute for Agriculture and Trade Policy.
ssuppan@iatp.org

[1] Steinfeld, H. (2006) *Livestock's long shadow*. FAO.
[2] OECD-FAO (2007) *Agricultural outlook 2007-2016*: 31-32.
[3] Otte, J. et al. (2007) *Industrial livestock production and global health risks*. PPLPI, FAO.
[4] Kaul, I.& Conceição, P. (eds.) (2006) *The new public finance*. UNDP/OUP.

If meat is murder, what is vegetarianism?

A letter from America

WORLDVIEW



Marco Flavio Marinucci © Flaviophoto.com

Raj Patel

Raj Patel is the author of *Stuffed and starved: markets, power and the hidden battle for the world food system* (Portobello Books).

With all the evidence that industrial meat production is bad for the environment, cannot be sustained equitably for the planet, is a profligate waste of resources, accelerates global warming, and is a vector for all kinds of nasty disease, we might be tempted to enjoin everyone to go vegetarian. And there's much merit to the idea.

Research shows that vegetarians and vegans have a smaller carbon footprint than their carnivorous counterparts. In the United States, where about 2.5 percent of the population is off meat, there's a marked difference between the annual CO2 output of vegetarians and the average population. One recent study found that an ordinary US diet contributed nearly 1.5 tons more CO2 than a vegetarian one, and switching from meat-eating to vegetarian could cut US national greenhouse gas emissions by up to six percent.

Vegetarians can also feel smug about their health. A range of studies have shown that vegetarians have a lower chance of dying from stroke and heart disease than the average population. One of the largest studies of its kind was carried out in the UK, where 33,883 meat-eaters were compared with 31,546 non-meat-eaters. In that study, meat eaters were more likely to smoke and to be more overweight. But, and this should give us pause, a range of studies also conclude that in other diseases, vegetarians and similarly health-conscious meat eaters fare equally well.

It's the 'similarly health-conscious' that ought to set off alarm bells, because it suggests that vegetarianism isn't spread randomly through society and that being vegetarian is associated with other kinds of health-increasing behaviour. This is borne out by the evidence.

In the US, recent survey data find a link between occupation and diet. Manual workers tend to eat more meat, and beef in particular, than their counterparts in service or professional occupations. Further, eating less meat is linked to higher levels of education though not, strikingly, with higher levels of income, which suggests there's something cultural going on.

This leads to an interesting twist to our thinking about meat and its absence. Certainly it's true that becoming vegetarian can improve your life chances, other things being equal. But precisely because other things *aren't* equal, the commandment to be vegetarian isn't one that all of us can follow with equal ease. There is a host of social obstacles that stand between the majority of the population in the Global North, and sustainable eating patterns.

We already know, from studies in California for example, that the amount of time you spend commuting and your level of obesity are directly related. We know that poor people are less able than the rich to live near their places of work. We know, further, that 14 percent of US fast food meals – dense in animal meat – are eaten in cars. This comes not from a particular national fondness for the interior of cars as dining venue but because, for many of America's working poor, the only chance they have to eat a meal is en route from one job to the next.

Further, it's much harder to be vegetarian if you don't have access to fresh fruits and vegetables. If you live in a poor neighbourhood in the United States, you might be subject to 'supermarket redlining', a phenomenon named for its similarity to the banking practice of pinning red lines onto local maps to denote the areas where the bank would make no loans. Supermarket redlining is like this, but with food. It is an increasing feature of American geography that low income neighbourhoods are overwhelmingly less likely to have fresh food markets, and far more likely to have fast food outlets and convenience stores. The consolidation of supermarkets means that in Boston more than half of fifty big chain supermarkets have closed since 1970, and the number in Los Angeles County has fallen by almost 50 percent as the markets concentrate in only the well-to-do areas.

The choices that each of us make, then, aren't made freely. And there are some profound obstacles that prevent society's poorest from choosing a healthy diet. In the Global South, being vegetarian is a de facto state simply on the grounds of income. In the Global North, vegetarianism is the prerogative of the middle class.

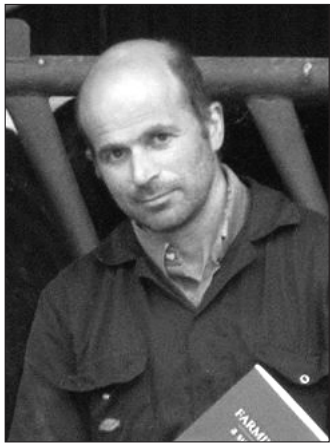
So what changes, then, would be required to move all of us in the Global North towards a more sustainable diet? For a start, we ought to dispense with the idea there's a magic bullet. No single intervention can unpick the morass of culture and class that pushes poorer people to unsustainable eating habits. In moving towards sustainable eating, it is important to jettison the kind of thinking that reduces diet to individual choice. Instead, a range of policies are needed, from encouraging fresh fruit and vegetable markets in low income areas, to increased government-sponsored social housing nearer places of work, to building cities with walkable environments and green space, to living wage legislation, to a reduction in the length of the work day, and to some fairly serious investment in education and healthcare to stamp out the injustices that accompany our differential access to food.

It is impossible, in short, to talk about meat in America or elsewhere without talking about class. And, if we want to eat sustainably, that's a conversation we can put off no longer.

Punishing our pinta?

We should face up to dairy's dilemmas

ON THE FARM



John Turner

John Turner is a farmer near Stamford in Lincolnshire, where he runs a 100 hectare mixed farm together with his brother and parents. He was a founding member of FARM.
john.turner@farm.org.uk

It's been something of an *annus horribilis* for livestock. From foot and mouth to Norfolk turkeys, bluetongue to Shambo and the ongoing dilemma of how to deal with bovine tuberculosis, a sorry list of 'disasters' has blighted their contribution to farming. And that's without even venturing into climate change and cows' generous capacities for generating methane.

Even though our own animals are thankfully hale and hearty, the enforced restrictions to control disease in other parts of the country have had a profound impact. It has meant that our store lambs, which have been grazing the clovers on the farm over the summer, currently have no market and, nationally, a vast surplus of lamb awaits shelf space when there is little seasonal demand.

However, one story above all else has left me feeling particularly exasperated: *The Times* suggested that Defra had put forward plans to encourage us to replace fresh milk with UHT. The article, which must have coincided with a news vacuum that day, provided an opportunist (if creaky) platform to showboat about civil service interference with the great British pinta. Yet drowned in the ensuing wail of protest was an opportunity to look objectively at the role of livestock within food production and actually plan for its future, rather than deal with the fire-fighting business of disease prevention, climate change and animal welfare scare stories.

It has been three years since we ceased dairy production here at the Grange, yet I can still vividly remember my father's comment that for all the fuel, electricity, water, straw and animal feed that came up the farm drive, there was relatively little that went back down the drive by way of produce. And that is the inescapable truth; animals are not particularly efficient vectors if their sole function is converting resources such as water, energy and feed into food for us.

Of my four children, one is vegetarian and one vegan – in each case a decision arrived at through their own conscience. Sharing with them a common interest in food and music, we spent some time at various festivals throughout the summer, which reminded me that diets are changing and that vegetarian food has come a long way since being a sufferance borne by dedicated disciples. Both family and a wider awareness of cultural changes have prompted me to re-evaluate where livestock will fit into our future plans; not because I'm no longer comfortable with the ethics of using animals and their products for food, but because of the inherent inefficiencies associated with the systems of livestock production needed to remain competitive within today's markets.

There are few mainstream markets, for instance, that distinguish between grass-fed and 'commercially reared' beef. Grass-fed livestock systems convert a feed few of us would entertain in our own diets into a variety of useful products and at the same time fulfil the job of managing and maintaining permanent pasture and upland areas with a fraction of the inputs their mechanical or human equivalents would consume. In contrast, most commercial beef (often distinguished by having both the taste and texture of cardboard) relies on wheat, barley, soya, potatoes and a whole range of other feedstock, which would be far more efficiently used if we just ate it. Ironically, the latter system is held up by the food industry as the benchmark and the criteria for grading meat and rewarding farmers using the grass-fed systems at a considerable disadvantage.

On my own breakfast table, the milk that I used to bring home fresh from the morning's milking has been replaced by a substitute made from oats. It's more by instinct than hard evidence that I have convinced myself the environmental footprint of my box of 'Oatly' is far smaller than the pinta that it replaced. That is why I hope the thorny issue of mapping out a sustainable future for livestock within farming is debated more openly and we take the opportunity to look honestly at both the resources livestock consume and the role they play. And it is also why I hope the press will understand that unless such a dialogue happens, the pages that cover livestock will continue to be dominated by negative stories about pollution and disease rather than the positive role animals can actually play within farming systems.

The Business Page

Industry benefits if regulators learn from BSE

Patrick van Zwanenberg and Erik Millstone

One calamity seems to follow another in the meat industry: BSE, foot and mouth disease (FMD), bluetongue, and the threat of bird flu. The reasons these disasters present such profound challenges lie partly in the practices of modern agriculture and food production – which may cause and exacerbate the scale and seriousness of disease outbreaks – but also depend on how government and industry have responded to these threats.

The policy mistakes that contributed to the BSE saga have rightly been subjected to a searching public inquiry and sustained effort by the UK government to reform some aspects of the ways in which policies are made and justified. They needed to be. Mistakes meant that we took considerably larger risks to human health from BSE than we should have done. The mistakes adversely affected consumer confidence and trust in government, livestock farming, and the meat products industry. That lack of trust spilled over and affected consumer attitudes to a range of other food issues, notably around innovations in agricultural biotechnology. Consumer trust depends not just on confidence in the expertise of advisors and the competence of policy-makers, but also on confidence that advisors and policy-makers put consumers' interests first.

As one of the aims of food regulation is to engender consumer trust in the products provided by the private sector, one might have thought that the food industry would be particularly keen to ensure that government's regulatory reforms did not fall short of expectations. But, as on-going problems with food safety policy demonstrate, that is just what has happened.

The decision to create the Food Standards Agency (FSA) in April 2000 was, in part, a decision to separate regulation from sponsorship in respect of food safety. But three key areas of UK agricultural and food policy-making remained unreformed, namely BSE, pesticides and veterinary medicines. The continued lead role over BSE, first by MAFF and later DEFRA, is bizarre. It is tantamount to maintaining the pretence that BSE is primarily a veterinary problem rather than an issue of human health. DEFRA should be developing agricultural policy within a regulatory framework that is concerned with public health and set by the FSA, rather than the FSA struggling to deal with public health within the parameters set by DEFRA's approach to agriculture.

By the same logic, primary responsibility for policy on pesticides and veterinary medicines should also be transferred to the FSA. The FSA is supposed to represent and protect the interests of consumers, while the Veterinary Medicines Directorate (VMD) sees drug companies as its customers, and the majority of members of the Veterinary Products Committee have numerous commercial and consultancy interests in the companies manufacturing and marketing veterinary medicines. The VMD has also become increasingly dependent on the animal drug companies for its funding. One example of the consequences: the Soil Association has criticised the VMD for doing the bidding of the animal drug industry when it revised its proposals so as to allow the veterinary drug companies to advertise prescription-only products directly to farmers, despite the provisions of an EU directive prohibiting that practice. It is now clear, in the wake of the most recent FMD debacle, that veterinary medicines can harm veterinary health and the livelihoods of livestock farmers, as well as public and environmental health. DEFRA and the VMD are not protecting consumers, livestock or the long-term interests of the livestock and meat industries.

One of the most acute problems with BSE policy-making was that scientific uncertainties were not always disclosed, not just to the public but even to ministers and some senior officials. This meant that ministers were sometimes unaware of the scope for precautionary decision-making or that public policy decisions were in practice being taken by expert advisors rather than ministers. In response, the Food Standards Agency recommended in 2002 that all its expert advisory committees should conduct their business in open sessions. It insisted that unorthodox and contrary scientific views should be considered, and that advisory committees should always provide a clear audit trail showing how and why they reached their decisions, where differences of opinions had arisen, and which assumptions and uncertainties were inherent in their conclusions.

The FSA rules do not apply to other government departments and agencies. DEFRA's rules and procedures, for example, continue to exempt the VMD and the Pesticides Safety Directorate, and their advisory committees, from proper scrutiny or accountability.

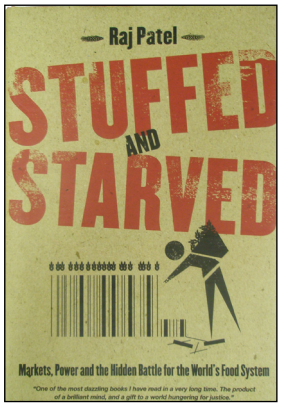
Even where the rules do apply they need following. Recently assessing new evidence indicating that mixtures of artificial colours and a preservative adversely affected children's behaviour, one problem at the FSA was that the advisory committee failed to follow those procedural rules, and the FSA's Board and its officials failed to notice.

Some lessons have been learnt from BSE but mostly just the easy ones. Sponsorship and regulation are still not properly separated, and science and politics are entangled in ways that hide decision-making from due scrutiny, and that undermine ministerial responsibility for making policy choices. It is in the food industry's long term interests to persuade ministers and officials that reform must go further.

Patrick van Zwanenberg is a Research Fellow at the Science Policy Research Unit, University of Sussex.
p.f.van-zwanenberg@sussex.ac.uk

Erik Millstone is a Professor of Science Policy at the University of Sussex, who combines his scholarly studies with an active engagement in food policy debates.
e.p.millstone@sussex.ac.uk

reading



Stuffed and starved: markets, power and the hidden battle for the world food system
Raj Patel | 2007 | Portobello

"Unless you're a corporate food executive, the food system isn't working for you" says Patel, a contributor to this edition of Food Ethics. He justifies this claim with a dazzling array of facts and stories. He argues that epidemic obesity and millions left starving are both the direct consequence of a system controlled by a shrinking number of powerful corporations.

Patel describes the global food system as a battlefield, and while consumers have only recently been wrestling with the problems of how to eat well, farmers have long been fighting against appropriation by national and global behometh. With our menu crafted by the biggest players in the supply chain, we lose sight of what food is for and become disconnected from its production and the joy of eating it.

But there is hope! In his closing chapter, Patel reminds us that, whatever the wound, people have always fought back. He rallies us to reclaim our food sovereignty. RO

Blueprint for a green economy
Quality of Life Policy Group | 2007
Conservative Party
Much awaited environmental policy proposals from a committee set up by the UK's centre-right to its own party's leadership. The chapter on food and farming includes recommendations for CAP reform, stronger regulation of supermarkets and a new Public Diet Institute. TM

Challenging health inequalities
Elizabeth Dowler & Nick Spencer (eds.) | 2007 | The Policy Press
Focusing on the strategies adopted by a government that specifically set out to reduce health inequalities, this book critically examines UK policy and programmes introduced by New Labour over the last 10 years. RO

Development economics between markets and institutions
Erwin Bulte & Ruerd Ruben (eds.) | 2007 | Wageningen Academic
A thorough, no-frills primer on agricultural development economics. Contributors consider the relationships between such factors in development as trade policy, land tenure, technology and food security. RO

Food is different
Peter M Rosset | 2006 | Zed Books
A clear and accessible account of the impact of trade liberalisation on farming and, in particular, on small farmers throughout the world. Rosset sets forth his argument for rebuilding the global food system, taking it outside the reach of the WTO. RO

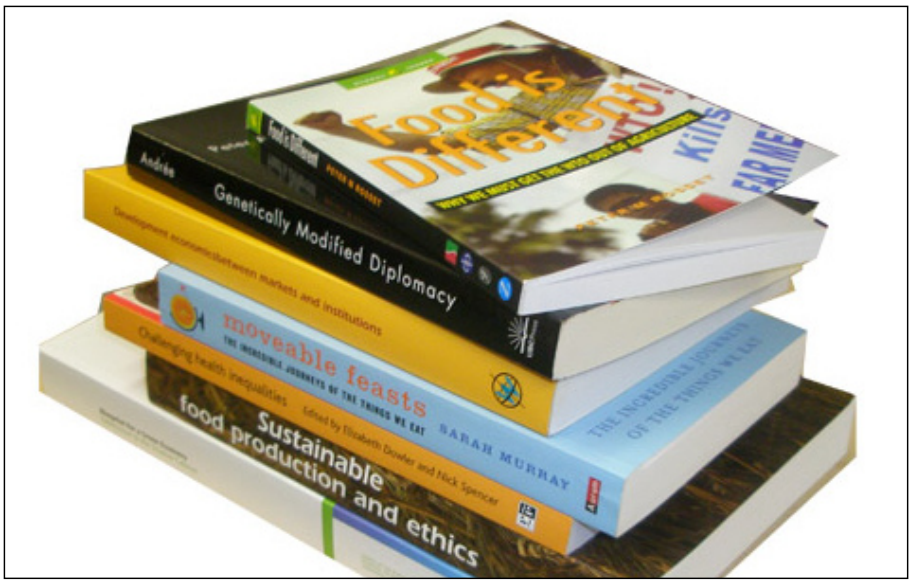
Genetically modified diplomacy
Peter Andrée | 2007 | UBC press
An analysis of the global politics of agricultural biotechnology that investigates in-depth a central site of political struggle – the 2000 Cartagena Protocol on Biosafety. In fine detail, Andrée looks at the international wrangling to determine genetic engineering regulations and discusses the clash in perspectives that it has engendered. RO

The global food economy
Anthony Weis | 2007 | Zed Books
A sweeping overview of the contradictions and crises in the global food economy, the temperate grain-livestock complex and the shift from colonialism to global market integration in the South. The author argues that multilateral regulation entrenches an uneven playing field, and outlines the battle between more corporate industrial agriculture or more ecological approaches that recognise the rationality of small farming. GT

Moveable feasts
Sara Murray | 2007 | Aurum Press Limited
An entertaining and highly informative account of the way food is moved, processed and packaged. Murray argues that the odysseys of food have rarely made it into the history books. This amusing description of the quest for sustenance redresses that balance. RO

Slow Food nation
Carlo Petrini | 2007 | Rizzoli Ex Libris
A witty, powerful and principled manifesto for a new gastronomy from the founder of Slow Food: "I am a gastronome. No, not the glutton with no sense of restraint... No, not the fool who is given to the pleasures of the table and indifferent to how the food got there. I like to know the history of a food and of the place that it comes from..." TM

Sustainable food production and ethics
Werner Zollitsch et al. (eds.) | 2007
Wageningen Academic
An impressively rapid turnaround for this book-full of papers delivered at the 7th Congress of the European Society for Agricultural and Food Ethics in September 2007. A 550-page snapshot of the state of the art in ethical research, analysis and debate on food and farming. RO



eating

By Tim Finney

Tim Finney gave up an easy life in the BBC to take on the organic meat business at Eastbrook Farm back in 1995. He now spends some glamorous time in pursuit of abattoir excellence within the EU.
www.helenbrowningorganics.co.uk

A slaughterhouse
Schlachthofstrasse
A city in
Northern Germany

How I rate it
Overall ****
Fairness ***
Health **
Animals ****
Environment ***
Taste ****
Ambience ***
Value for money *****
(maximum five stars)

This isn't strictly a restaurant review. I can't remember what I ate – probably a salami sandwich with yellow mustard as a late breakfast – exactly where I was or even the year. What sticks, though, is the stream of people pouring into the slaughterhouse off *Schlachthofstrasse* in this rich industrial north German city. The canteen was their preferred place for breakfast. No Starbucks for them.

The quality and provenance of the ingredients is irrelevant here. And it's not as if the place had any special charm. What's remarkable is that the slaughterhouse was where it was, just another city-centre building, and that the locals treated it as an essential part of their city infrastructure, clearly seeing it as a perfectly normal place to buy and eat food.

If I'd written this 100 years ago I expect people would wonder why. I'm no historian but my guess is slaughterhouses everywhere were located where they best served people, which means close to where people lived and worked. But no longer. Ever tried to visit a slaughterhouse? Ever really seen one or known what it was as you drove past? Ever knocked on the fortress-like gates and asked if you could pop in for a meal? You'd be locked up. Almost without exception, the slaughterhouse has been condemned to the remotest industrial estates, as far from prying eyes as it is possible to be. It would be easier to break into a prison.

There's something wrong here, and it's a wrong that just keeps getting worse as pressures push wider the 'distance' between the meat and its eaters.

I understand that people, given a choice, avoid mess and smell and inconvenience. In the world of meat and animals and eating, there's lots of smell and mess. But without the smell and mess, can we understand what's really happening? This anaesthetised life seems so simple. Someone else does the killing, somewhere else, and someone else does the clearing up, thank God. But are you happy to eat what comes out of this process? And even happier when the chicken is even cheaper than last week or beef mince is on BOGOF?

My German experience wasn't perfect and German slaughterhouse operators are themselves under pressure from their urban authorities to get the hell out of town – shamefully, most have. What it brought home to me, though, is that in a more rational world, we would be asking the slaughterhouses to come into town, please. They would have windows, too, so people could see into them. We would naturally use them to feed us directly, either from their canteens, restaurants or butchers' shops; we would be proud of our family working in them, providing their neighbours and citizens with good fresh food with low food miles. We would see for ourselves, and smell and hear, what exactly was involved in this far from anaesthetised world, and we would be much better able to decide whether we really wished to eat meat. It's hard to make rational decisions on this when all you've got to go on is a plastic pack, its reddish contents and a label you might not always believe.

As far as I can recall, by the way, breakfast was completely satisfactory, though the service was a little haphazard and some might have found the smell disconcerting. My fellow diners seemed very happy. I'm now working with a superb new UK abattoir and, if I have my way (which is unlikely), it will become one of the best places to eat in the south of England. At the moment it is not and sadly it isn't in a town centre either.

upcoming events

food ethics

4th - 5th Dec '07	**A Practical Seminar on the Common Agricultural Policy** Agra Europe | www.agra-net.com | London, UK
5th - 6th Dec '07	**Biowastes and the Carbon Economy** The Composting Association | www.compost.org.uk | Telford, UK
6th Dec '07	**Rachel Carson Memorial Lecture: Food Security or Food Democracy?** Pesticide Action Network UK | www.pan-uk.org. | London, UK
14th Dec '07	**What Does 'Green' Mean: Seeking to Understand and Meet Conflicting Aspirations for Food** Association of Applied Biologists | www.aab.org.uk | London, UK
17th - 18th Dec '07	**Functional Foods: Authentication Workshop** Association of Applied Biologists | www.aab.org.uk | York, UK
18th -19th Dec '07	**Effects of the Environment on the Nutritional Quality of Organically Produced Foods** University of Reading | www.apd.rdg.ac.uk/organicfoods | Reading, UK
Jan '08 (tbc)	**Soil Association Conference** Soil Association | www.soilassociation.org/conference | Tbc, UK
2nd - 4th Jan '08	**A Climate of Change: Agriculture, the Solution not the Problem** Oxford Farming Conference | www.ofc.org.uk | Oxford, UK
16th Jan '08	**Food and Climate Change** Resurgence and Friends of the Earth | www.resurgence.org | London, UK
16th Jan '08	**The Heat is On!** Natural England | www.naturalengland.org.uk | Newmarket, Suffolk, UK
29th - 30th Jan '08	**4th Annual Brussels Climate Change Conference** Epsilon Events | www.climate-policy.eu | Brussels, Belgium
29th Jan '08	**Climate Change and its Impact on Health** The Royal College of Physicians | www.rcplondon.ac.uk/event | London, UK
29th Jan '08	**Consumer Attitudes Towards 'Healthy' Food** Haymarket Events | www.haymarketevents.com/conferences | London, UK
6th Feb '08	**Measuring 'Green' - Does Life Cycle Analysis Make Sense for Food?** Association of Applied Biologists | www.aab.org.uk | London, UK
7th - 8th Feb '08	**Green Retail - Maximising Your Green Potential** Eventrus | www.eventrus-corporate.com | London, UK
28th Feb '08	**Biofuels - a Solution for a Low Carbon Future?** Society of Chemical Industry | www.soci.org | Bristol, UK
4th Mar '08	**Corporate Carbon Footprinting** Haymarket Events | www.haymarketevents.com/conferences | London, UK
2nd Apr '08	**The Business Response to Climate Change** Resurgence and Friends of the Earth | www.resurgence.org | London, UK
2nd - 4th Apr '08	**Food Security and Environmental Change - Linking Science, Development, and Policy** Global Environmental Change and Food Systems (GECAFS) | www.gecafs.org | Oxford, UK
6th - 9th Apr '08	**Food & Drink Expo 2008** www.foodanddrinkexpo.co.uk/index.php | Birmingham, UK
24th - 27th Apr '08	**The Real Food Festival** Brand Events Group | www.realfoodfestival.co.uk | London, UK
28th - 30th May '08	**Sustainable Consumption and Alternative Agri-food Systems** SEED Unit, Liège University | www.suscons.ulg.ac.be | Arlon, Belgium
3rd - 6th June '08	**The Royal Show 2008** The Royal Agricultural Society of England | www.royalshow.org.uk | Stoneleigh, UK
18th - 20th Jun '08	**Organic World Congress: Cultivate the Future** IFOAM | www.ifoam.org/events | Modena, Italy
19th - 22nd Jun '08	**Royal Highland Show 2008** Royal Highland Centre | www.royalhighlandshow.org | Edinburgh,UK